



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Databasteknik

Database Technology

EDAF20, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED C/D

Date of Decision: 2023-04-18

General Information

Compulsory for: IDA2, IEA2

Language of instruction: The course will be given in English

Aim

The course gives basic theoretical and practical knowledge about database systems and their organization. The emphasis is on relational databases.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to describe information systems with E/R models and UML notation, and translate such models into relational form
- be able to normalize database schemas
- be able to use the query language SQL to create and update a database, and to retrieve information from the database
- know about alternative ways to organize data in databases and about the design of database management systems.

Competences and skills

For a passing grade the student must

- be able to use tools to implement a database
- be able to develop application programming interfaces to databases.

Contents

- Introduction to database management systems. The basics of the relational model, the query language SQL. Methods for data modelling and database design, E/R and UML diagrams. Theory of relational databases: functional dependencies, normalization, relational algebra. Programmable SQL, triggers. Programming interfaces to databases
- An orientation about other data models, for example, NoSQL databases, semi structured data (JSON, XML)
- Security and integrity in databases, concurrency, transactions. An orientation about implementation of database managers and of query languages.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written examination. For a passing grade the laboratory exercises and the project must also be completed. The final grade of the course is based on the result of the written examination, which takes place after the first study period of the course.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0112. **Name:** Laboratory Work and Project.

Credits: 3. **Grading scale:** UG. **Assessment:** For a passing grade the laboratory work and the assignment must have been completed. **Contents:** Compulsory laboratory work and a compulsory assignment.

Code: 0212. **Name:** Written Examination.

Credits: 4,5. **Grading scale:** TH. **Assessment:** Written examination. The final grade of the course is based on the result of this exam. **Further information:** The first written examination takes place after the first study period of the course.

Admission

Admission requirements:

- EDAA10 Computer Programming in Java

The number of participants is limited to: No

The course overlaps following course/s: EDA215, EDA216, EDA636, EDAF75

Reading list

- Databasteknik: Databasteknik, Thomas Padron-McCarthy, Tore Risch. Studentlitteratur, 2018, ISBN: 9789144069197. The first edition of this book can also be used.
- Or.
- Garcia-Molina, H & Ullman, J D & Widom, J: Database systems, The Complete Book, Second Edition (International Edition). Prentice Hall, 2009, ISBN: 0-13-135428-0. The first edition of this book can also be used.

Contact and other information

Director of studies: Studierektor, studierektor@cs.lth.se

Course coordinator: Marcus Klang, marcus.klang@cs.lth.se

Course coordinator: Alma Orucevic-Alagic, alma.orucevic-alagic@cs.lth.se

Course homepage: <http://cs.lth.se/edaf20>

Further information: The course is given at Campus Helsingborg.